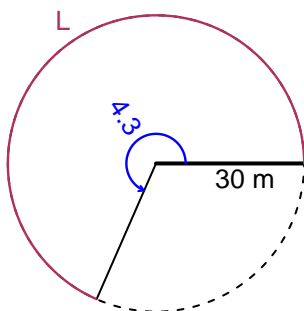# Trig Final (TEST v628)

- You should have a calculator (like Desmos) and a unit-circle reference sheet.

Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The radius is 30 meters. The angle measure is 4.3 radians. How long is the arc in meters?
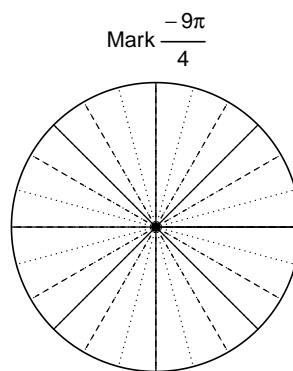

Question 2

Consider angles $\frac{8\pi}{3}$ and $\frac{-9\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(\frac{8\pi}{3}\right)$ and $\sin\left(\frac{-9\pi}{4}\right)$ by using a unit circle (provided separately).

Mark $\dfrac{8\pi}{3}$

Mark $\dfrac{-9\pi}{4}$

Find cos(8π/3)
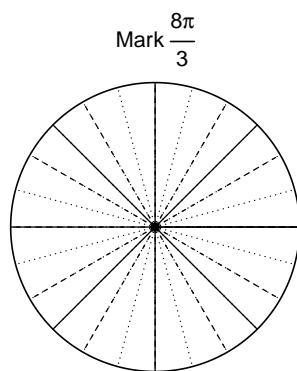
Find sin(−9π/4)

Question 3

If $\sin(\theta) = \frac{-60}{61}$, and θ is in quadrant III, determine an exact value for $\tan(\theta)$.

Question 4

A mass-spring system oscillates vertically with an amplitude of 6.81 meters, a midline at $y = 2.34$ meters, and a frequency of 5 Hz. At $t = 0$, the mass is at the minimum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).